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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,935	01/09/2002	Yonglin Huang	15436.249.24.1.	4597

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EXAMINER
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SONG, SARAH U

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant(s)

10/042,935

Applicant(s)

HUANG ET AL.

Examiner

Sarah Song

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-15 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Applicant's communication filed on February 9, 2004 has been carefully considered and placed of record in the file. Claims 1 and 8 have been amended. New claims 14 and 15 have been added. Claims 1-15 are pending.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 3, 4, 8, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (*Optical Coupling Characteristics of Laser Diodes to Thermally Diffused Expanded Core Fiber Coupling Using an Aspheric Lens*).** Kato et al. discloses an optical device comprising a TEC optical fiber including a first core, wherein a diameter of the first core at a first end of the TEC optical fiber is larger than the diameter of the first core in an unexpanded portion of the TEC optical fiber; and a focusing lens (aspheric lens) configured to focus light into the first end of the TEC optical fiber such that a light spot created by the focused light on a surface of the first end of the TEC optical fiber has a light spot diameter that is larger than the diameter of the first core in the unexpanded portion of the TEC optical fiber. The optical device further comprises an active component, wherein the active component is a laser diode. See Figure 1. The method claims are inherent as setting forth requisite steps.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al.** Kato et al. does not specifically disclose the optical fiber comprising an optical fiber pigtail that is permanently affixed to the optical device. Laser diode packages comprising optical fiber pigtails are well known in the art. It would have been obvious to one having ordinary skill in the art to provide the optical device of Kato et al. with an optical fiber pigtail that is permanently affixed to the optical device to prevent misalignment and inadvertent coupling losses between the laser diode and the optical fiber.

6. **Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. in view of Papademetriou et al. (U.S. Patent Application Publication 2001/0020164 newly cited).** Kato et al. discloses all of the limitations as discussed above, but does not specifically disclose the light spot diameter to be smaller than the diameter at the first end of the TEC optical fiber. Papademetriou et al. discloses the benefits of coupling a light spot having a diameter less than that of the fiber core (paragraph [0040]). One of ordinary skill in the art would have recognized that the teaching of Papademetriou et al. would be applicable to any fiber, including TEC fibers, more specifically, applicable to coupling light into the input face of the TEC fiber. Therefore, it would have been obvious to one having ordinary skill in the art to keep the light spot diameter less than the core diameter at the first end (input end) of the fiber of

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Kato et al. One of ordinary skill in the art would have been motivated to make the modification in order to minimize energy losses as taught by Papademetriou et al.

7. **Claims 1, 5-7, 8, 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (U.S. Patent 5,825,950).** Cheng discloses an optical device comprising a TEC optical fiber 144a including a first core, wherein a diameter of the first core at a first end of the TEC optical fiber is larger than the diameter of the first core in an unexpanded portion of the TEC optical fiber; and a focusing lens 138 configured to focus light into the first end of the TEC optical fiber. The device further comprises a passive component 140 configured to process the light and output the light to the focusing lens 138. The optical device further comprises an additional TEC optical fiber 132 that includes a second core, wherein a diameter of the second core at a first end of the additional TEC optical fiber is larger than the diameter of the second core in an unexpanded portion of the additional TEC optical fiber, and wherein the additional TEC optical fiber is configured to input the light into the optical device from the first end of the additional TEC optical fiber. See column 5, lines 54-60.

8. Cheng does not specifically disclose that the light spot created by the focused light on a surface of the first end of the TEC optical fiber has a light spot diameter that is larger than the diameter of the first core in the unexpanded portion of the TEC optical fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to focus the light onto the end of the TEC optical fiber such that the light spot created by the focused light on a surface of the first end of the TEC optical fiber has a light spot diameter that is larger than the diameter of the first core in the unexpanded portion of the TEC optical fiber since it was known in the art that 1) the intensity of an input beam at the fiber end face must be kept

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sufficiently low to prevent overheating and burning of the optical fiber end and 2) to match the spot diameter of the focused light to the diameter of the guided mode at the optical fiber end face to ensure efficient coupling.

### ***Response to Arguments***

9. Applicant's arguments filed February 9, 2004 have been fully considered but they are not persuasive. Applicant states that Kato et al. does not anticipate claim 1. More specifically, Applicant states that Figure 1 and the description associated therewith give no reference to spot size. Examiner respectfully disagrees, directing Applicants to Figure 1, which clearly indicates, by means of the dashed lines, a spot size diameter greater than that of the unexpanded portion of the TEC fiber. Therefore, the rejection is deemed proper.

10. Regarding Applicant's argument to Cheng, Applicant states that the Office Action has not provided a prior art reference, which remedies the deficiencies of Cheng. It would have been within the general knowledge of one of ordinary skill in the art to provide the spot size diameter larger than that of the unexpanded portion of the fiber. Nonetheless, Applicant is directed to column 3, lines 15-28 of Kawasaki et al. (U.S. Patent 5,594,825 previously cited) for a prior art teaching.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Abe (U.S. Patent 5,757,993) is cited as anticipating at least claims 1 and 8.

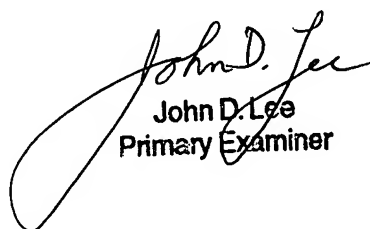
12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 571-272-2359. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 571-272-1562 or to the technical support staff supervisor at telephone number 571-272-1615.

  
sus

  
John D. Lee  
Primary Examiner